OVERPRODUCTION OF RAW MATERIALS

by

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INTRODUCTION

OVERPRODUCTION of raw materials is one of the main causes of the downward movement of prices which occurred during the past decade and which reached particularly large proportions during the economic depressions of 1920-1921 and 1929-1930. The overproduction of 1920 was, to a considerable extent, a result of the maladjustments of supply and demand resulting from the war. The overproduction of recent years has resulted partly from uneconomic attempts of producers and governments to raise prices, partly from improved methods of production, partly from the imposition of new tariff barriers, partly from shifts in the demand of consumers and partly from declining prices.

Rubber, coffee, silk, nitrates and copper are all examples of raw materials which have been overproduced as a result of attempts to maintain them at a high price level. Producers of rubber in the British East Indies, of coffee in Brazil, of nitrates in Chile and of silk in Japan have obtained the aid of their respective governments in plans to restrict exports and raise prices, with the result that excessive output of these commodities or substitution of synthetic products, such as manufactured nitrate and rayon, has been encouraged. American copper producers have taken advantage of the Webb-Pomerene Act to form an export association which also has attempted to maintain prices at an artificial level, with the same results of overproduction and reduced consumption.

The overproduction in the copper and rubber industries has been aggravated by improved methods of production—differential flotation and machine mining in the case of copper, and bud grafting in the case of rubber. Methods of producing crude petroleum also have become somewhat more efficient, and the proportion of gasoline has been substantially increased by cracking and hydrogenation.

Both the sugar and coal industries have suffered since the war from the tendency of many nations to raise higher and higher tariff barriers. In efforts to make themselves self-sufficient and encourage home industries, practically every European nation, as well as the United States, Australia and other countries, has placed a substantially higher tariff on sugar, thus encouraging a costly home industry and tending to reduce imports to a minimum. As a result, Cuba and Java, which have great natural advantages in the cultivation of sugar cane, have suffered from restricted demand and overproduction. A similar situation in the coal industry has been caused by the readjustment of European frontiers after the war and by reparation agreements with Germany. By the terms of the Treaty of Versailles, Germany lost a large part of the Silesian coal fields to Poland and the Saar field to France, and was obligated to pay large reparations. As a consequence, the Germans substantially increased the output of their remaining fields to facilitate the payment of reparations. The natural result has been a surplus of European coal production which has been particularly harmful to England.

The condition of over-capacity in the coal industry has been made worse by increased efficiency in the use of coal, and the tendency to use petroleum and electricity generated from water power as substitutes. During the past decade most of the navies of the world and a large part of the merchant marine have been equipped with oil-burning Diesel engines, with a consequent substantial reduction in the use of coal for bunker purposes.

Textile raw materials have suffered se-

verely from shifts in consumer demand. Style changes have tended to restrict the quantity of textiles used and to create a shift in demand from cotton, wool and flax to the glossy fibres—silk and rayon. In the case of cotton, overproduction was avoided for a number of years, owing to the curtailment of supply which resulted from boll weevil depredations in the United States. During the past year, however, visible supplies of both cotton and wool have reached excessive totals.

Silver has suffered in recent years from a further shift in the monetary demand. India and China, the only two large countries which have continued to use silver as a standard of value during the post-war period, have adopted plans for its demonetization. This situation has been aggravated by the tendency of other countries to reduce the quantity of silver in their subsidiary coins. At the same time silver production has increased, since silver is an important by-product of many copper mines.

Production of jute and tea has increased primarily as a result of price declines. In both cases the small Asiatic farmers who furnish most of the supply have increased their output in the hope of balancing the decline in their income caused by the reduced prices. The inevitable result has been an increase in surplus supplies and a further decline in prices. Demand for tea also has been restricted by the loss of the Russian market and the increasing preference for coffee in the United States.

There is little reason to believe that the causes of overproduction will not continue to be as important in the future as in the past. In fact, recent measures of producers to limit the supply and raise the price of sugar, copper and tin indicate that there is little tendency to profit from the lessons of the past. On the other hand, part of the present overproduction is due to restricted buying because of unstable prices and this cause is likely to become less operative when prices are stabilized and business confidence is restored.

In the sections which follow, a more detailed study will be presented of the situation with regard to five of these commodities —rubber, copper, sugar, coffee and petroleum.

RUBBER

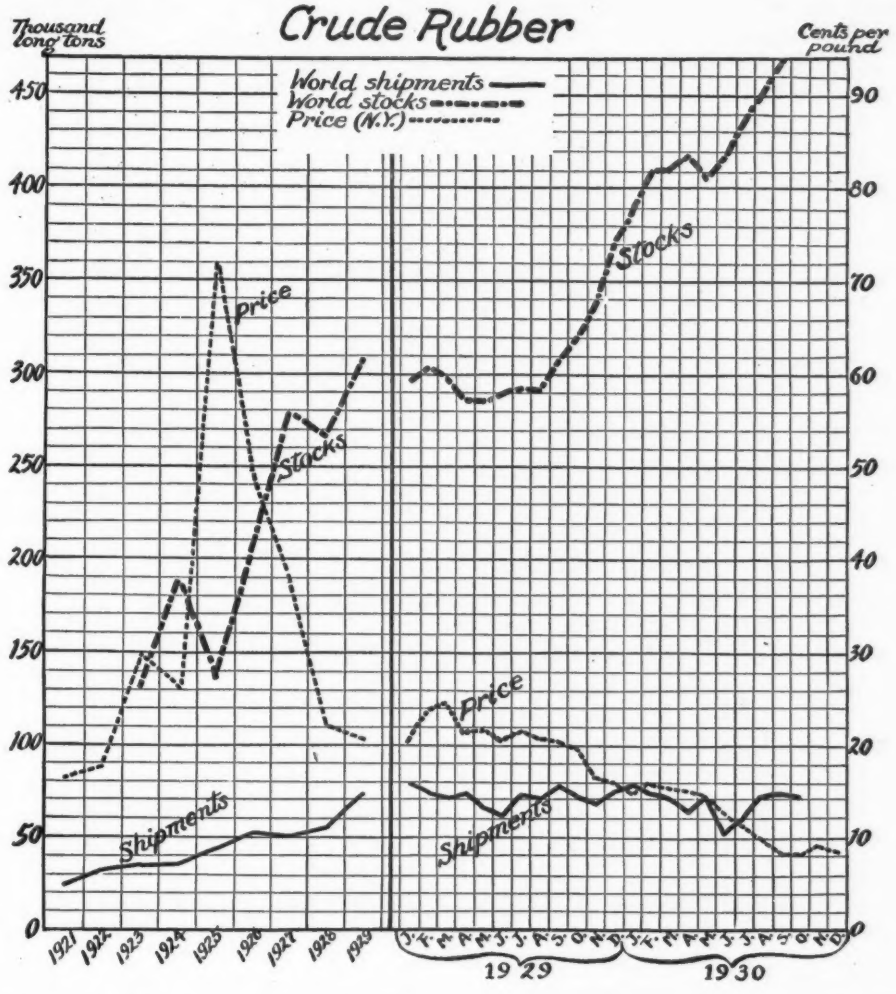
Rubber has become during the past quarter of a century one of the world's most important raw materials, largely due to the remarkable growth of the automotive industry. Three nations have a particularly keen interest in the supply and price of rubber—the United States, which consumes from 65 to 70 per cent of the total annual production, and Great Britain and the Netherlands, which together produce over nine-tenths of the total output.

Prior to 1905 practically all of the world's rubber supply consisted of wild rubber gathered in tropical America and Africa. It is the development of plantation rubber in the Far East, however, which has been the outstanding factor in increasing the annual world production from 60,000 tons in 1905 to 860,000 tons in 1929. It is estimated that over seven million acres have been planted with rubber up to the present.

THE STEVENSON RESTRICTION ACT

The large increase in the demand for rubber from automotive and other industries during the World War, and the fact that it requires from four to six years for a rubber tree to come into bearing, prevented any oversupply of rubber from becoming apparent until 1920, despite the enormous increase in planting during the preceding fifteen years.[1] After private efforts by the (British) Rubber Growers' Association to restrict production had failed, the Colonial Office of the British government appointed a committee, headed by Lord Stevenson, to investigate the situation. A plan of cooperation with the Dutch was first recommended, but this could not be secured as the govern-

1. It is estimated that of the world's rubber acreage 15 per cent was planted by the end of 1909, 15 per cent from 1910 to 1912, 40 per cent from 1913 to 1920, 3 per cent from 1921 to 1924, and the remainder during subsequent years. Cf. Eric Miller, "The Outlook in the Rubber Industry," *The Rubber Age*, December 1929.



ment of the Dutch East Indies recognized the difficulty of controlling native production and, furthermore, felt that it would be unfair to limit the output of the natives after urging them for years to plant rubber.[2] On October 2, 1922 the Stevenson committee reported in favor of restriction by the British government, and the chief rubber-producing colonies enacted the suggested legislation, which became effective November 1. The chief features of the Stevenson Restriction Act were as follows:

(1) The authorities assigned to each rubber estate a "standard production" based upon output in the year ended October 31, 1920, with additional allotments for areas which came into bearing later.

(2) During the three months beginning November 1, 1922 no plantation was allowed to export at a rate which would exceed 60 per cent of its standard production.

(3) If during any quarter the price of rubber in London averaged less than one shilling a pound, 5 per cent of standard production was to be deducted from the rate of permissible exports in the succeeding quarter, while in case of a rise in the average price for a quarter to over one shilling three pence a pound, the quota was to be raised 5 per cent.[3]

Thus the pivotal prices to be used in determining the extent of restriction were 24 and 30 cents a pound, prices which it was believed would yield the average rubber-grower a reasonable profit. The course of world rubber production and of rubber prices at New York, which are shown in the above chart and the following table, give some idea of both the immediate and the ultimate effects of the Stevenson Act.

2. U. S. Department of Commerce, "International Cooperation Among Rubber Producers," *Commerce Reports*, April 7, 1930.

3. Cf. B. B. Wallace and L. R. Edminster, *International Control of Raw Materials* (Washington, The Brookings Institute, 1930), p. 176-78.

WORLD RUBBER PRODUCTION AND PRICES

Year	World Production[4] (in thousands of metric tons)	Prices[5] (cents a pound)
1920	347	35.9
1921	298	16.5
1922	397	17.3
1923	486	30.7
1924	494	26.4
1925	591	73.0
1926	660	48.7
1927	720	38.1
1928	686	22.6
1929	880	20.6

The immediate effect of the Restriction Act was a stabilization rather than a decrease of world production. This was due to the rapid increase of output in the Dutch East Indies and other areas not subject to British control, to the allowances made under the act for new areas coming into bearing, and to a certain amount of smuggling. Nevertheless, the increase in world output from 1922 to 1924 was relatively small and prices showed no marked trend, with a range from 20 to 33 cents a pound. During 1925 there was a sharp increase in demand which carried the spot price at New York to over one dollar a pound for a short time. This spectacular advance was due partly to the actual limitation of production under the Stevenson Act—which reached its greatest severity at the end of 1924—but more particularly to the accelerated growth of the automobile industry in the United States, and the general adoption of balloon tires, which required substantially more rubber than high pressure tires.

This drastic advance in rubber prices not only resulted in enormous temporary profits for the plantation industry, but also encouraged world-wide measures to increase production on one hand and similar efforts to reduce consumption on the other. The United States, which consumes about 70 per cent of the world's rubber,[6] was thoroughly aroused by the great increase in prices, which was ascribed to the British restriction plan. Among the measures taken to combat high prices were:

(1) Increased use of reclaimed rubber.

(2) Increased production of wild rubber.

(3) Increased planting of *hevea* outside of the British Empire.

The increase in the proportion of reclaimed rubber from about one-fifth to one-third of the total factory consumption was particularly effective. Other measures, such as the development of new plantations in Liberia and Brazil by American manufacturers, were more important in their psychological than in their practical effects. The wild scramble to buy crude rubber suddenly subsided, and there was a sharp decline in prices during the first half of 1926 which restored them to a level of about 40 cents a pound. This downward movement was aided by an increase to 100 per cent in the permissible quota under the Stevenson Act in the quarter beginning February 1, 1926.

Despite the fact that rubber prices were still far above the level which had been considered fair in 1922 (24 to 30 cents a pound), the British government tightened the restrictions in the autumn of 1926. The revised regulations which became effective November 1, 1926 provided:

(1) That the pivotal prices of crude rubber at London be raised to a range of 42 to 48 cents a pound;

(2) That changes in quantities of permitted exports be made by amounts of 10 or 20 per cent instead of 5 or 10 per cent; and

(3) That no provision be made for export at a rate above 100 per cent or below 60 per cent of standard production.

These revisions raised the pivotal prices to nearly twice the level provided by the 1922 act and furnished greater checks on supply in a declining market. As rubber prices continued to decline, the quota was reduced in each successive quarter under the new regulations until it reached the minimum of 60 per cent in the quarter beginning May 1, 1927. Exports were restricted to this minimum level throughout the following year and a half. The immediate effect of the new restrictions was a considerable curtailment of exports from the British colonies,

4. Data are for production or exports as published by the League of Nations *International Statistical Yearbook*.

5. Prices are annual averages based on wholesale quotations for plantation smoked rubber sheets at New York as published by the U. S. Bureau of Labor Statistics in *Bulletin No. 493, Wholesale Prices, 1913 to 1928*, and supplementary monthly bulletins.

6. Cf. Union Trust Company of Cleveland, *Trade Winds*, March 1930.

but this was not sufficient to reduce the total world output for 1927. Prices rallied moderately in the last quarter of the year, however.[7]

By the beginning of 1928 a new decline in prices was under way and British rubber-growers realized that their efforts to control the situation were becoming increasingly futile and costly. This was due to the great increase in output of other areas, particularly the Dutch East Indies, and the consequent decline of British dominance in the world situation. Between 1921 and 1927 world rubber production had more than doubled despite the restriction measures, whose main effect appears to have been to lead to an increase in the Dutch proportion of the total from about 25 to 40 per cent, while the British share declined from 67 to 53 per cent.[8] In view of these facts, the British announced that restriction would end on November 1, 1928.[9] The immediate effect of these announcements was a sharp decline in the price of rubber to about 20 cents, at which level it was maintained during the remainder of 1928 and most of 1929. Production showed a moderate increase in 1928 and expanded sharply in the following year as a result of increased output from the British possessions.

Realizing the danger of overproduction and unprofitable prices, both Dutch and British interests have attempted to agree upon a number of new methods of control during the past two years. Since all these attempts proved unsuccessful, the government of the Dutch East Indies on September 6, 1930 announced that it would make no attempt to restrict the output of rubber.[10] This was followed by a decline in the price of crude rubber to less than 8 cents a pound —the lowest price in history.

The chief causes of the present overproduction of rubber are:

(1) The great stimulation of rubber planting caused by the excessively high prices of 1925 and the fact that rubber planted at that time has recently commenced bearing.

(2) The introduction of bud grafting, which often increases the yield three-fold an acre.

(3) The general business depression of the past year which has had a particularly adverse effect on the automotive industry.

It is not likely that much new rubber will be planted while prices continue near the present low level, but the need for economy may cause an increase in bud grafting operations which have to date been applied to less than 5 per cent of the total planted area.[11] This latter factor will probably tend to offset the decline in the output of trees planted prior to 1910, which have passed the best years of production. Rubber consumption, on the other hand, has shown an average annual increase of 13 per cent during the past nineteen years,[12] and it is not likely that there will be any permanent cessation of this expanding demand.

COPPER

The copper industry has been featured by an amazing metamorphosis during the past year and a half. At the beginning of 1929 inventories were relatively small, production was unable to keep pace with demand and prices were mounting rapidly. Inventories are now exceptionally large, production has been curtailed substantially and prices are the lowest recorded during the present century. Fear of a copper famine has been supplanted by the spectre of overproduction.

Among the factors to be considered in an analysis of this situation are:

(1) Sources of copper production;
(2) Ore reserves;
(3) Cost of producing different increments of supply;
(4) Organization of the copper industry;
(5) Chief present uses of copper and potential changes in demands; and
(6) Recent trends in the production and price of copper.

In almost every year of the period from 1894 to 1925 the United States has supplied

7. Cf. Wallace and Edminster, *International Control of Raw Materials*, p. 179-80.
8. *Ibid.*, p. 184.
9. U. S. Department of Commerce, *Commerce Yearbook, 1928*, Vol. I, p. 461.
10. *New York Times*, September 7, 1930.
11. Cf. *Trade Winds*, cited.
12. Cf. "The Outlook in the Rubber Industry," cited.

over half the copper production of the world. During the last five years this proportion has been less than half and has shown a declining tendency owing to the increased output of other leading producing-areas—Chile, Peru, Africa and Canada. Development in the two latter areas has been particularly intensive in recent years; the potential output of the largest Rhodesian company is expected to be increased by about 250,000,000[13] pounds annually, and that of Canadian mines by an additional 300,000,000 pounds annually by 1932.[14]

Copper ore reserves of the United States have been reduced considerably during the past half century, but supplies of porphyry ore are still very large. Estimated reserves of twenty-one companies, which together produce about half the annual output of the United States, total about one and a half billion short tons, while those of reporting foreign companies exceed one and a quarter billion tons. Among the large reserves not included in these totals are those of other American producers and most of the Canadian, African and Russian ore supply. One Canadian mine has ore reserves of 120,000,000 tons, while the leading African producers are estimated to have 280,000,000 tons of ore with an average ore content of 4.9 per cent.[15] These ore reserve estimates indicate that there is no probability of a serious scarcity for a number of decades.

Costs of producing copper often vary considerably in different mines of the same company and even in different parts of the same mine. These costs also are affected by changes in wages and taxes and by the volume of operations at any given time. The following estimate[16] of the proportion of 2,122,000,000 pounds of North and South American copper produced within different price ranges in 1928 sheds some light, however, on the amount of copper which might be produced at different price levels:

COPPER PRODUCTION COSTS

Cost (cents a pound)	*Per cent of total*
under 8	28.9
8 to 9	17.6
9 to 10	25.5
10 to 11	5.7
11 to 12	15.4
over 12	6.8

These figures indicate that approximately three-quarters of the output of the reporting American producers can be mined at a cost of 10 cents a pound or less, and that over nine-tenths of the total output costs less than 12 cents a pound.

Having surveyed the location and size of potential supplies of copper and the cost of mining the ore, let us next consider the leading sources of demand. The United States has for many years been the chief consumer as well as the principal producer of copper, taking approximately half the world output. Consequently, the following estimate[17] of American consumption by industries in 1928 gives some indication of the relative importance of different types of industrial demand for the world as a whole:

CONSUMPTION OF AMERICAN COPPER BY INDUSTRIES—1928

Industry	*Short Tons*
Electrical manufactures	213,000
Automobiles	125,000
Telephone and Telegraph	119,000
Light and power lines	115,000
Wire and rods, other	86,300
Buildings	62,000
Bearings and bushings	42,000
Valves and pipe fittings	20,500
Refrigerators, electric	13,200
Miscellaneous	118,500
Manufactures for export	65,600
Total United States consumption	980,100

Copper is the metal best suited by a combination of natural properties and cost for use by the electrical industries, and their demand may be greatly increased by electrification of railroads and more general use of electricity in domestic heating and refrigeration. On the other hand, copper is not irreplaceable in the case of the automobile and building industries, and the growth in demand from these sources seems uncertain

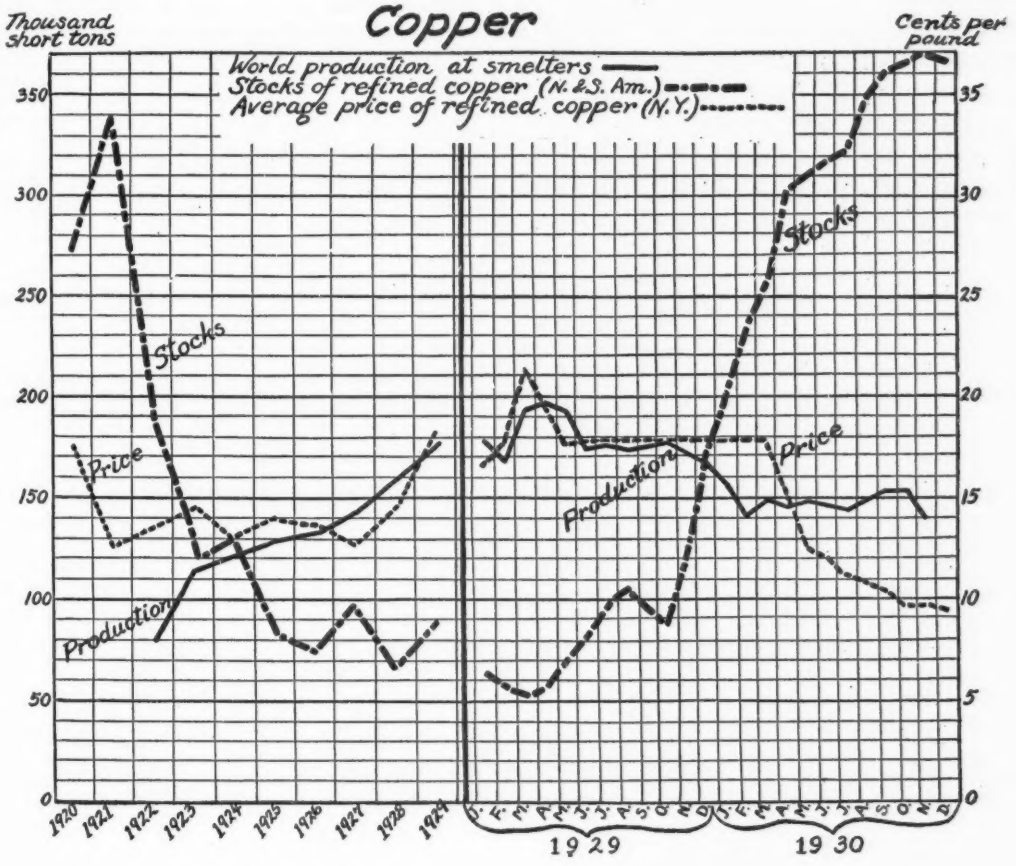
13. Cf. Percy E. Barbour, "The Next Move in the Price of Copper Metal," *The Annalist*, March 7, 1930.

14. Cf. "Canadian Copper Production to Reach Peak this Year," *Engineering and Mining Journal*, June 23, 1930.

15. Cf. Percy E. Barbour, "Copper Production and Consumption," *Engineering and Mining Journal*, March 24, 1930.

16. Cf. A. B. Parsons, "Analyzing the Cost of Producing American Copper," *Engineering and Mining Journal*, June 8, 1929.

17. Cf. A. B. Parsons, "A Statistical Study of Copper Production and Consumption," *Engineering and Mining Journal*, June 15, 1929. (Data compiled by American Bureau of Metal Statistics.)



in view of present indications of the temporary saturation of demand for new residences and passenger automobiles.

The ability closely to adjust production to demand depends upon the concentration of ownership or control in an industry. A large proportion of the copper output of the world is in the hands of a few companies. In fact, a small number of American corporations control such a substantial proportion of the world's output of low-cost copper that they are usually dominant factors in determining price policies. Furthermore, in 1926 the copper industry, under the Webb-Pomerene Act,[18] formed an association known as Copper Exporters, Incorporated, which is a sort of international cartel. This organization, which controls over nine-tenths of the world's production,[19] determines the price at which copper shall be exported from the United States. American producers usually adjust domestic copper prices in accordance with this export quotation, although they are not legally permitted to combine for this purpose. In 1927 United States producers formed an association known as the Copper Institute to "aid the copper industry through wider knowledge and clearer understanding of the economic factors affecting the production, manufacture, distribution, and consumption of copper and copper products."[20] The Copper Institute has sought to develop a number of new uses for the metal and to encourage its consumption. Through both ownership and organization, the copper industry seems closely knit and should be able to adjust its output to the needs of consumers.

Copper production during the past fifty years has shown an average increase of 6 per cent annually. Moreover, this growth was regular throughout the four decades prior to the end of the World War.[21] Since

18. The Webb-Pomerene Act expressly exempts export corporations from the Sherman Anti-Trust Law.
19. Cf. Samuel Crowther, "Copper: All-American Metal," *World's Work*, October 1930.
20. *Ibid.*
21. Cf. L. C. Graton, "Some Aspects of the Copper Industry," *Bulletin No. 208*, Mining and Metallurgical Society of America, January 1930.

1918, demand has declined sharply twice and the growth of production has been less regular than in the preceding decades. At the close of the war copper production was keyed to a maximum in response to a demand which came largely from munition plants and other war industries. With the cessation of this demand, stocks accumulated rapidly and there was a sharp decline in price. Production was drastically curtailed and in 1921 reached the lowest level in many years. Changes in production, stocks on hand and the price of copper since the bottom of the post-war depression are shown below and indicated graphically in the chart on page 441.

PRODUCTION, STOCKS, AND PRICE OF COPPER, 1921-30

Year	World Production Blister Copper[22] (in thousands of short tons)	Refined Stocks[23] (in thousands of short tons)	Price[24] (cents a pound)
1921	622	338	12.50
1922	1,002	188	13.38
1923	1,407	120	14.42
1924	1,508	129	13.03
1925	1,587	83	14.04
1926	1,659	73	13.80
1927	1,736	97	12.92
1928	1,960	66	14.57
1929	2,104	89	18.11
1930	1,750	304	12.77

Copper prices throughout the period from 1921 to 1928, ranged from 12 to 15 cents, approximately the same level as before the war. The average price of all commodities, on the other hand, was about 50 per cent higher in this period than in the pre-war era. The relatively low price of copper seems to have been due chiefly to two factors —large-scale production and increased technical efficiency. The following table[25] gives some indication of the growth in large-scale production of American copper during the past two decades:

COPPER PRODUCTION—NORTH AND SOUTH AMERICA
(IN THOUSANDS OF SHORT TONS)

	Large Mines[26]	Small Mines	Total
1909	269	443	712
1915	471	439	910
1920	566	322	888
1925	928.5	315.5	1,244
1928	1,148	389	1,537

The ratio of large-scale production to total production increased from 38 per cent in 1909 to 75 per cent in 1928. Earnings reports and dividend payments indicate that practically all the large-scale producers operated at a profit during 1928, while the smaller producers were much less prosperous.[27]

As a result of the success of the Copper Institute in increasing consumption of copper, and of the Copper Exporters, Incorporated, in restricting production to the immediate demand, stocks of copper were reduced to a very low level at the end of 1928 and prices rose sharply to a peak of 24 cents a pound in March 1929. World production increased considerably in response to this enhancement of value and speculators gave much publicity to the development of rich mines in Rhodesia and Canada which would increase the supply largely. Quotations receded to 18 cents during April

22. League of Nations, *International Statistical Yearbook, 1929.* (Data converted from metric tons to short tons.)

23. U. S. Department of Commerce, *Survey of Current Business*, monthly. (Averages of monthly data compiled by American Bureau of Metal Statistics.) Stocks of blister copper are not included as they are quite constant in volume and are not available for consumption by other industries. Refined stocks are for North and South America only, but these constitute the great bulk of world stocks.

24. *Engineering and Mining Journal.* (Price for ingot copper electrolytic, New York. F.o.b. mine price differences from year to year would be relatively the same.)

25. Compiled from data presented by S. D. Strauss, "What Kept Copper Down," *Engineering and Mining Journal*, May 18, 1929.

26. Large mines are defined as those having a production of over 20,000 short tons a year.

27. Strauss, "What Kept Copper Down."

1929, and were stabilized at that level for about a year.

As business activity and the general level of commodity prices declined sharply in the latter half of 1929, the maintenance of the price of copper at 18 cents a pound, according to some commentators, appears to have had a number of unfortunate results:[28]

(1) The stimulation of production of small, high-cost mines;

(2) The retardation of consumption, and encouragement of substitution of cheaper metals;

(3) The curtailment of production by large low-cost producers; and

(4) The accumulation of large inventories.

The larger producers were most adversely affected by this price maintenance as customs smelters, which purchase ore from small mines, took precedence in foreign sales.[29]

Stocks of refined copper more than tripled in the six months ending with April 1930, and this evidence of world overproduction finally induced Copper Exporters, Incorporated, to reduce the price by four cents. As inventories continued to accumulate during the summer, copper prices were reduced further and reached a level of 10 cents a pound on October 1. Production has shown a moderate decline in recent months, but still appears to exceed current demand.

The chief problem of the copper industry appears to be the development of a sufficient increase in the demand for copper to absorb the increase in supply caused by the opening of new mines in Rhodesia and Canada. The concentration of control in the copper industry should facilitate this needful coordination of production to consumption.

SUGAR

Sugar is at present one of the most generally overproduced commodities in the world.[30] The same causes which brought about excess production of rubber and coffee during the last decade have operated in the sugar industry—a war shortage, subsequent overproduction, and government restriction of output by Cuba, the leading producing country—thus encouraging expansion in other parts of the world.

In the case of sugar the situation has been aggravated by the network of tariffs which encircle the globe.[31] The surplus stocks of sugar, which are virtually given away in one producing country,[32] are not free to move into other countries because of tariffs, government subsidies and consumers' taxes.

There are several reasons for these tariff walls. During the war there was an acute sugar shortage in many European countries. This made the public willing to support a policy of encouragement of domestic production even at a high cost, as they feared that their supply from the tropics might again be cut off. Furthermore, sugar-beet culture insures a good rotation of crops, clean fields and an improved soil.[33]

In Europe the existence of surplus labor is an important argument in favor of raising beet sugar, as the intensive cultivation of beets, together with the factory processes, gives employment to large numbers.[34] Another reason for sugar tariffs is that government treasuries are able to obtain large revenues from sugar at a relatively small cost of collection. There are also the questions of vested interests and favorable trade balances.

Various governments in Europe and also in North America, therefore, have done everything possible to encourage the domestic beet-sugar industry. In spite of the protection which they have given this industry, however, world production of beet sugar since the year 1910-1911 has increased less than a million tons, while the output of cane sugar has more than doubled.[35]

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28. Cf. J. K. Finlay, "The Stabilization of Copper," *Engineering and Mining Journal*, December 21, 1929.

29. Cf. William O. Scroggs, "Dollars and Coppers," *The Outlook*, May 14, 1930.

30. Cf. Thomas Chadbourne, *Facts About Sugar*, October 1930.

31. League of Nations, Economic and Financial Section, *Sugar* (Memoranda prepared for the Economic Committee by H. C. Prinsen Geerligs, F. O. Licht and Gustav Mikusch), C.148.M.57.1929.II.

32. "Department stores in Cuba in an effort to aid the sugar industry are giving away five pounds of sugar with every dollar's worth of merchandise." Cf. *New York Evening Post*, October 6, 1930.

33. Philip G. Wright, *Sugar in Relation to the Tariff* (New York, McGraw-Hill, 1924) p. 19.

34. League of Nations, *Sugar*, Licht, cited.

35. *Ibid.*

Distribution of sugar is also affected by geographical limitations; it is expensive to transport such a bulky commodity long distances.

The following table shows net imports and exports of sugar by the principal producing and consuming countries arranged by continents:

TABLE I

SUGAR IMPORTS AND EXPORTS[36]
(1929, Preliminary)
Short Tons

	Net Exports		*Net Imports*
EUROPE			
Czechoslovakia	595,577	United Kingdom	2,174,211
Poland	317,222	France	250,426
Germany	211,629	Other Countries	534,121
Totals	1,124,428	Totals	2,958,758
ASIA			
Java	2,827,238	India	991,990
Philippines	623,355[37]	China	665,696[38]
		Japan	80,543
Totals	3,450,593	Totals	1,738,229
NORTH AMERICA			
Cuba	5,226,978	United States (including Hawaii and Porto Rico)	4,785,750
Dominican Republic	594,453[39]	Canada	454,691
Totals	5,821,431	Totals	5,240,441

Africa, South America and Australia are practically self-sufficing, and most of the small quantity of sugar which they export goes to England. Australia carries production control to its logical conclusion. To protect its domestic cane-sugar industry, the importation of sugar is entirely forbidden, while the acreage under cultivation is limited to prevent overproduction.[40]

Continental Europe is also practically self-supporting, if importations from the French colonies are included. The only European country which imports largely is England. Before the war the United Kingdom imported sugar from Germany, and during the period of post-war shortage from Cuba via the United States. England decided in 1925 to follow the lead of other countries in subsidizing beet-sugar production as a cure for unemployment, and now produces about 400,000 tons annually.[41]

In Asia, Java is the great sugar-exporting country, and sells to India, China and Japan. Java took advantage of Cuban restrictions to increase her production and now finds herself with surplus stocks on account of the chaotic political and economic conditions in China and India. The Philippine Islands also export a substantial amount of sugar, most of which goes to the United States. Since free entry into the United States has made sugar raising profitable, the output of the Philippines has increased considerably, to the consternation of American beet growers.[42] India is one of the largest sugar-producing countries of the world, but her people consume more than they produce.

In North America, Cuba is the great producing country and the United States the great consumer. The United States obtains part of its sugar supply from its own territories and possessions—Porto Rico, Hawaii, the Philippines and the Virgin Islands—whose sugar is admitted duty free; part from its domestic beet-sugar industry, which is expected to yield 1,185,000 tons in 1930;[43] and a small portion from the domestic cane-

36. Compiled from *Foreign Crops and Markets*, April 14, 1930, U. S. Department of Agriculture.

37. 1928.

38. 1927.

39. 1928.

40. Cf. J. Ormsby Gore, "Sugar Crisis," *The Nineteenth Century and After*, May 1930.

41. Cf. Chadbourne, *Facts about Sugar*, September 1930.

42. *Ibid.* In December 1930 Governor-General Davis vetoed a bill establishing a sugar board in the Philippines, on the ground that it did not contain a provision limiting production. *The Philippine Herald*, December 9, 1930.

43. Figure furnished by the U. S. Department of Commerce.

sugar industry. Since Cuba is given a 20 per cent preferential tariff rate, the American market virtually is closed to all other sugar-exporting countries.

The history of the production of sugar in Cuba and its relation to the United States tariff has been fully treated in another *Information Service*.[44] Briefly, the sugar industry, which had been expanded in Cuba as a result of the war, continued to be profitable until 1925—when consumption passed production—except during the crash which followed the "dance of the millions." In 1926 the European beet crop attained normal pre-war levels, while Cuban output rapidly increased.

Attempts to strengthen prices by restricting the Cuban sugar grindings resulted in increased crops in Porto Rico, Hawaii, the Philippines and the Continental United States.[45] Java also refused to cooperate, and invaded the British market.

Cuban restrictions were lifted for the 1928-1929 crop, which proved to be the largest on record—5,156,000 short tons—and the price of sugar broke from 2.36 to 1.11 cents a pound. The Cooperative Export Agency, popularly known as the "Single Seller," was organized to market the 1929-1930 crop; but the huge carry-over of 965,000 tons from the year before glutted the market and much of the new crop could not be moved. Credits were frozen, as money could not be borrowed on warehouse receipts, and the unfortunate laborers were forced to resort to barter. The "Single Seller" proved such a failure that it was discontinued in April 1930.[46] On the last day of September the October position dropped to 0.94 cents a pound, the lowest level in history.[47]

To summarize, the countries that have the most serious marketing problems are: in Europe, Czechoslovakia and Germany; in Asia, Java, because of the abnormal conditions in other Eastern countries; and in the Western Hemisphere, Cuba, because of its largely increased output and the tariffs of other countries.

The enormous world sugar crop of 1928-1929 established an all-time record, and the resulting heavy stocks are continuing to depress prices.[48] The following table shows the course of sugar prices in relation to world production since 1920.

TABLE II

SUGAR PRICES AND WORLD PRODUCTION

	PRODUCTION FOR CROP YEAR[49] *(in thousands of short tons)*	PRICE FOR CALENDAR YEAR[50] *(cost and freight without duty for 96 centrifugals, N. Y.)*
1920	17,999	11.40
1921	19,563	3.46
1922	20,577	2.98
1923	20,861	5.24
1924	22,833	4.19
1925	26,624	2.56
1926	27,834	2.57
1927	26,531	2.96
1928	28,295	2.47
1929	30,435[50]	2.04
1930	30,045[50]	1.49

The price of sugar continues its downward course, and at present is much less than the minimum cost of production which is shown for a number of countries in the following table.[51]

44. Cf. Raymond Leslie Buell, "Sugar and the Tariff," F. P. A. *Information Service*, Vol. V, No. 6, May 29, 1929.
45. *Ibid.*
46. Cf. Chadbourne, *Facts about Sugar*, April 19, 1930.
47. Cf. Willett and Gray, *Weekly Statistical Trade Journal*, October 2, 1930.
48. *Foreign Crops and Markets*, cited.
49. U. S. Department of Commerce, *Commerce Yearbook, 1929*, Vol. II, p. 711.
50. *Journal of Commerce*.
51. League of Nations, *Sugar*, Geerligs, cited.

TABLE III

COST OF SUGAR PRODUCTION

(*In cents a pound*)

Cuba	2.37
Java	2.47
Philippines	3.06
Porto Rico	4.31
Hawaii	4.48
Louisiana	4.97

While production has been increasing by leaps and bounds, world consumption to the end of 1929 showed only a normal annual increase of 4.5 per cent.[52] During the first six months of 1930 American consumption was reduced by 5 per cent,[53] and at the present rate will fall short of last year's record by some 200,000 tons.[54] It is estimated that European consumption will decline about 2½ per cent.[55] These facts may be partially accounted for by the change from prosperity in 1929 to world-wide depression in 1930. Another cause is said to be the decree for slim figures which has issued from Parisian fashion centers,[56] combined with cigarette advertising which is familiar to all Americans.[57] It is questionable, however, whether the decrease in sugar consumption is as large as it appears. Some of the decrease in deliveries may be due to the cutting-down of stocks to a minimum on account of the drastic fall in price.[58] At the end of September 1929 there were sugar stocks in the United States of 926,000 tons, while on the corresponding date in 1930 they amounted to only 412,000 tons.[59]

Production as well as consumption reached a record total in 1929 (see Table II), while the slightly reduced supply of 1930 was more than offset by decreased consumption. Consequently, on August 31, 1930, world stocks reached the record figure of 10,120,000 long tons, which was 10 per cent higher than the year before.[60]

The following table shows the production, consumption and surplus of sugar from September 1, 1929 to August 31, 1930.[61]

TABLE IV

SUGAR PRODUCTION, CONSUMPTION AND SURPLUS—1930

Continent	*Production*	*Consumption*	*Surplus (in thousands of long tons)*	
North America	8,530	6,930	1,600	
South America	1,710	1,425	285	
Europe	8,215	10,250	2,035	(deficit)
Asia	7,610	6,840	770	
Africa	786	659	127	
Oceania	630	460	170	
World Totals	27,481	26,564	917	

What will the world do with 10,120,000 long tons of excess sugar, which no one seems to want apparently at any price? The international conference of sugar producers which has recently ended at Brussels has endeavored to deal with this problem.

THE CHADBOURNE PLAN

Thomas L. Chadbourne, representative of American sugar interests in Cuba, formulated a plan which provided that Cuba limit its exports to the United States to 2,800,000 tons in 1931—slightly less than the average export of recent years—and that 1,500,000 tons of the surplus stocks on the island be acquired and disposed of during the next five years by the National Sugar Export Corporation organized for the purpose.

The Cuban government on November 15, 1930 enacted a law to carry out the provisions of the Chadbourne plan. As payment for the sugar, the producers will receive 5½ per cent government bonds on the basis of $4.07 for each bag of 325 pounds of sugar.[62] To pay interest and amortize the principal of the bonds, a tax of 11 cents a bag will

52. Cf. Chadbourne, *Facts about Sugar*, October 1930; also League of Nations, *Sugar*, Mikusch, cited.
53. *International Sugar Journal*, August 1930.
54. Cf. Chadbourne, *Facts about Sugar*, October 1930.
55. *Ibid.*, May 17, 1930.
56. League of Nations, *Sugar*, Mikusch, cited.
57. *Ibid.*; also, Chadbourne, *Facts about Sugar*, January 25, 1930.
58. Cf. Chadbourne, *Facts about Sugar*, May 17, 1930.
59. Cf. *Weekly Statistical Trade Journal*, cited.
60. *New York Times*, October 14, 1930.
61. *Ibid.*
62. Law for the Stabilization of Sugar, Chapter 1, Sections I and II.

be imposed on producers in each of the next five years.[64]

A commission was appointed to engage in an international conference in Europe, composed of Dr. Viriato Gutiérrez, president; Thomas L. Chadbourne, José M. Gomez, José M. López Ona and William C. Douglas.[65]

The first conference, which was held at Amsterdam late in November with representatives of the Java sugar industry, was successful. Java agreed to export 2,300,000 tons in 1931, and to increase this total 100,000 tons each year up to 2,700,000 tons in 1935, which is equivalent to a reduction of 10.42 per cent in each of the crops for the next five years.

Subsequent to this agreement, the Cuban and Javan producers proceeded to Brussels where they met representatives from Germany, Hungary, Poland, Czechoslovakia and Belgium. The outcome of this meeting was not so satisfactory because Germany insisted on an export quota of 420,000 tons as against the 200,000 tons allotted to her on the basis of exports in the previous year. The remaining countries agreed to a reduction of 15 per cent in their export quotas in the next five years, ranging from 9,000 to 120,000 tons compared with exports in 1929-1930.

On January 8, 1931 an agreement was reached with Germany permitting German exports of 500,000 tons in 1930-1931, 350,000 tons in 1931-1932 and 300,000 tons in the three succeeding years.[66] This amounted to an increase of 750,000 tons in the German quota for the five-year period, which it is planned to offset by a decrease of 575,000 tons in the Cuban quota and 175,000 tons in the quotas of other European countries. As a result of this plan, which includes all sugar producers except those in Peru, Santo Domingo and Russia, the present sugar production of about 27,000,000 tons will be reduced by 2,300,000 tons.

PETROLEUM

Overproduction of petroleum results primarily from the nature of the industry. Oil prospecting, like prospecting for gold and diamonds, yields a few rich prizes which entice further search regardless of the average return to the prospector or the current demand for the product. There have been further incentives to exploit oil resources inasmuch as labor costs are relatively small and each prospector has been anxious to obtain maximum output, since competing wells draw from the same underground pool. Furthermore, nation has competed with nation in a race for oil resources, accelerating their development and exploitation.[67] The result has been prolonged overproduction, and a waste of economic resources which from their nature are irreplaceable.

The United States both produces and consumes about two-thirds of the oil output of the world. American production in 1929 totaled 1,006,000,000 barrels of forty-two gallons. Venezuela and Russia were next in production importance with outputs of 137,000,000 and 103,000,000 barrels respectively. The principal producing countries and the relative size of their outputs are given in the following table:

OIL PRODUCTION—1929

(*in percentages*)

United States	67.7
Venezuela	9.3
Russia	6.9
Mexico	3.0
Persia	2.8
Dutch East Indies	2.6
Rumania	2.3
Colombia	1.4
All other countries	4.0
Total	100.0[68]

In 1929 total imports of crude oil into the United States amounted to 78,932,500 barrels,[69] and exports of crude and refined oil to 163,120,000 barrels.[70] Crude oil is im-

63. *Ibid.*, Section III. Certain Cubans attacked the Chadbourne plan on the ground that it would sacrifice the interest of the Cuban producer to that of the American producer in Cuba, who could better afford to curtail production. Cf. Carlos Manuel de la Cruz, "Lo Que Cuesta a Cuba El Plan Chadbourne," *El País*, November 10, 1930.

65. Cuban Department of Agriculture, Commerce and Labor, *Decree No. 1534*.

66. Cf. *New York Times*, January 9, 1931.

67. Cf. Ludwell Denny, *We Fight for Oil* (New York, Knopf, 1928).

68. Compiled by E. B. Swanson, Division of Petroleum Economics, U. S. Department of Commerce, Bureau of Mines.

69. U. S. Department of Commerce, *International Trade in Petroleum and its Products, 1929* (Washington, Government Printing Office, 1929).

70. U. S. Department of Commerce, *Bureau of Mines, Report 1929*.

ported from the Latin American countries, refined, and re-exported again in the form of gasoline.

As production of petroleum has increased, the price has tended to decrease. In the last ten years world production has more than doubled, while the price was cut in half in 1921 and has since shown an irregular downward tendency, as indicated in the following table:

WORLD PETROLEUM PRODUCTION AND PRICES

Year	(*in millions of barrels*[71])	(*dollars a barrel*[71a])
1920	691	3.44
1921	765	1.86
1922	857	1.78
1923	1,013	1.71
1924	1,010	1.84
1925	1,064	1.96
1926	1,091	2.03
1927	1,255	1.55
1928	1,315	1.54
1929	1,468	1.67
1930	.....	1.29[72]

This huge increase in production has been encouraged by the rapid increase in the use of automobiles, and by the cutthroat competition in the petroleum industry which followed the dissolution of the Standard Oil Trust in 1911.

Although consumption has increased rapidly, refineries have so improved their methods that increased demand for gasoline is easily supplied with a smaller production of crude oil. The newer process of cracking can yield up to 60 per cent,[73] while hydrogenation promises to yield 100 per cent.[74] At present there are about 700,000,000 barrels of crude petroleum and products stored in the United States, including about 40,000,000 barrels of gasoline.

Before it was realized how great the oil resources of the world actually were, there was much agitation for conservation, with the result that in 1924 the Federal Oil Conservation Board was created by President Coolidge.[75] In spite of the conservation movement, production increased until in February 1929 an understanding was reached by the leading oil concerns of the world, with the exception of the Russian, to keep production at the 1928 level. The Attorney-General of the United States stated that the proposed plan violated the Sherman Anti-Trust Law,[76] but some restriction has been achieved, nevertheless, through state and local units working in connection with the American Petroleum Institute.[77]

The smaller producers are being urged to combine for "unit development"; that is, to have their field operated as a unit. It is thought that unit development is the only measure that can prevent the Kettleman Hills field, with its unusually deep wells and very light oil containing from 50 to 80 per cent gasoline, from ruining the American oil industry.[78]

Some improvement in conditions is indicated by the attainment of a current equilibrium between supply and demand for petroleum; but the price structure is still weak because of inventories.[79] In 1928 total stocks of all oils increased 22,782,000 barrels, and in 1929, 68,156,000 barrels.[80] To October 1930 petroleum inventories increased by only about 4,000,000 barrels,[81] while the daily rate of production in October showed a decline of 17 per cent from the corresponding period a year ago—reaching the lowest rate in over two years.[82] Refining activities also decreased, from 85 per cent of capacity in October 1929 to 66 per cent in October 1930.[83]

Conditions in the oil industry have been aided by an 8 per cent increase in the 1930 consumption of gasoline over 1929.[84] The growth of consumption was less than in 1929, however, and this has prevented a reduction in stocks.[85]

In South America rapid strides are being made toward cooperation. In Venezuela proposals to curtail production have been made by both Lago Petroleum (Standard Oil of Indiana) and Royal Dutch Shell. While disagreement over details has prevented ac-

71. Cf. *International Statistical Yearbook, 1929*, p. 108.
71a. *Commerce Yearbook, 1929*, Vol. I.
72. Price in third week of October furnished by J. E. Pogue.
73. *Trade Winds*, cited, April 1930.
74. *Annalist*, September 12, 1930.
75. Cf. T. M. Kanappen, "Why Oils are in the Spotlight," *Magazine of Wall Street*, April 19, 1930.
76. *Foreign Trade*, August 1930.
77. *Magazine of Wall Street*, April 19, 1930.
78. *Wall Street Journal*, October 10, 1930.
79. Cf. J. E. Pogue, "High Cost of Gasoline Surplus," *Oil and Gas Journal*, October 2, 1930.
80. *Wall Street Journal*, October 10, 1930.
81. *Barron's*, October 6, 1930.
82. *Petroleum Age*, September 1930.
83. American Petroleum Institute, *Weekly Reports*.
84. *Petroleum Age*, September 1930.
85. Cf. *Oil and Gas Journal*, October 2, 1930, cited.

ceptance of these proposals, the other two large companies in Venezuela—Gulf Oil and Creole Petroleum (Standard Oil of New Jersey)—have voluntarily restricted their 1930 production. The result is that for the first nine months of 1930 the total oil output of Venezuela has remained practically equal to that in the corresponding period of 1929—at about 101,000,000 barrels.[86] Production has been further limited by the fact that there has been no increase in the total capacity of the shallow-draft tankers which transport the Venezuelan crude oil over the Lake of Maracaibo.[87] In Colombia production is likewise limited by the capacity of the Andean pipe line.[88] Cooperation has not been necessary in certain other countries, such as Mesopotamia, as the entire production there is in the hands of a single company.

Cooperative control of the existing oil supply, which appears to be the only solution to the problem of overproduction, has been achieved in several of the leading oil fields of the United States and similar measures are being considered in the leading competitive pools of foreign countries. In this case measures to control supply seem economically justified, provided prices continue to maintain a reasonable relation to costs.

COFFEE

On October 6, 1930 revolution broke out in Brazil, causing a drop in the price of coffee to the lowest point in recent years. The São Paulo Coffee Institute had maintained coffee prices at such high levels in preceding years that there was an orgy of overproduction in all coffee-producing countries, which culminated in a complete breakdown of the whole system of price control, a sharp fall in Brazilian exchange, and revolution.

Brazilian domination of the world coffee trade dates from the latter part of the nineteenth century. For a period of thirty-five years, from 1880-1881 to 1914-1915, the world's production of coffee, exclusive of Brazil, ranged annually from about 4,000,000 to 4,500,000 bags of 132 pounds each. Brazilian production, however, increased during this period from an average of 5,500,000 bags to more than 13,000,000 bags annually.[89] During the following decade Brazilian output was maintained at about the same average level, but there was a further expansion in 1927-1928 and 1929-1930.[90] In 1928 Brazil exported 1,832,000,000 pounds, while Colombia, the next largest producing country, exported 352,000,000 pounds.[91] Other countries which contributed materially to the world's supply of coffee were the Dutch East Indies, Venezuela and Salvador.

Most of the world's supply of coffee is classed as either "Brazilian" or "milds."[92] The "milds," which are grown in the Caribbean countries, comprised about 20 per cent of world production in the five-year period, 1905-1910, and have increased consistently so that in the last five years they have amounted to 30 per cent.[93]

World consumption of coffee has shown a normal increase. The use of coffee in the United States, the chief consuming country, has increased greatly from 1913 to 1927 and now amounts to about twelve pounds per capita annually.[94]

It is difficult to adjust production of coffee to demand, as the shrub does not begin to bear in commercial quantities until the sixth or eighth year.[95] Furthermore, a bumper crop one year may cause trees to become exhausted and give only a small yield the next season. The size of the crop, however, can usually be foretold with considerable accuracy almost a year in advance from the abundance of the flowers—which in Brazil begin to bloom in August and September,

86. O'Shaugnessy's South American Oil Reports, *Wall Street Journal*, October 16, 1930.
87. *Wall Street Journal*, October 18, 1930.
88. Cf. *Oil and Gas Journal*, January 30, 1930.
89. Cf. McCreery and Bynum, "The Coffee Industry in Brazil," U. S. Department of Commerce, *Trade Promotion Series, No. 93, 1930.*
90. *Commerce Yearbook, 1929*, Vol. II.
91. Cf. Henry H. Childers, "World Coffee Consumption Grows," *Exporters and Importers Journal*, February 28, 1930.
92. Cf. George J. Eder, "Latin-American Trade Economics," *Tea and Coffee Trade Journal*, August 1930.
93. Cf. *Bank of America Review*, June 1930.
94. *Commerce Yearbook, 1929*, Vol. II.
95. Cf. McCreery and Bynum, "The Coffee Industry in Brazil."

while the crop is not ready to come on the market until the following July.[96]

THE SAO PAULO COFFEE INSTITUTE

The history of price control in Brazil dates from 1905. Since that time there have been three successful valorizations,[96a] all of which were liquidated at profits, concluding in 1923. Prices surprisingly continued to rise through 1925.[97]

World production and prices of coffee since 1922 are shown in the following table:

WORLD COFFEE PRODUCTION AND PRICES

Year	*Thousands of bags*[98]	*Cents per pound*[99]
1922	19,788	10.2
1923	15,899	11.5
1924	26,324	16.8
1925	17,777	20.4
1926	22,102	18.2
1927	21,742	14.8
1928	34,143	16.5
1929	19,589	15.7
1930	37,347	8.8

After three successful and profitable attempts at valorization, it is not strange that the planters clamored for permanent control to regulate the marketing of the alternating large and small crops. In 1925 the Institute for the Permanent Defense of Coffee was organized by the state of São Paulo, and later similar measures were taken by the other coffee-growing states of Brazil.[1] The Institute aimed to stabilize prices through regulation of supplies coming into the market; it was to resort to buying only in emergencies. Huge warehouses were constructed in the interior and foreign credit was obtained to enable planters to store coffee. The coffee crop of 1927-1928 was of record size but, by the extension of credit and restriction of receipts in primary markets, prices were maintained at a fairly high level until 1929.

The price level set by the São Paulo Institute was determined by the desire to protect the highest-cost producers, those in the "old zone," where a majority of the trees are over thirty-five years of age and have long shown declining production.[2] As a result, marginal producers flooded the market, mild coffee entered into competition in world trade and supplies were piled up in the interior. The increase of stocks in the interior warehouses of São Paulo is shown by the following table.[3]

COFFEE IN STORAGE: SAO PAULO

July 1	*Thousands of bags*
1924	4,592
1925	1,786
1926	2,833
1927	3,312
1928	11,672
1929	8,785
1930	21,210

In 1927-1928 world production increased 15,000,000 bags, while consumption increased only 2,000,000 bags. This increase was almost entirely in Brazilian coffee, which represented 78 per cent of the world's crop.[4] To maintain prices, stocks were increased by 9,500,000 bags, an amount equal to more than one-third of the entire crop. Although the São Paulo crop of 1928-1929 was small, nearly 9,000,000 bags remained in the warehouses,[5] and the large crop of 1929-1930 caused a serious crisis despite the efforts of the São Paulo Coffee Institute.[6] On July 1, 1929 the visible world supply of coffee was about 14,000,000 bags.[7]

Meanwhile the continual carrying of the stocks had exhausted the credit resources of the Institute and private banks. From September to November 1929 prices broke from 16 to 11¾ cents a pound, a decrease of 26 per cent.[8] Panic reigned, and the Rio and Santos coffee exchanges closed their doors until a moratorium was declared by President Washington Luis.[9]

Finally, in April 1930, it was announced that a loan of $100,000,000 had been made

96. Cf. Wallace & Edminster, *International Control of Raw Materials.*

96a. Valorization is the process of attempting to give an arbitrary market value or price to a commodity by government interference or by maintaining a purchase fund to enable producers to hold their products.

97. *Ibid.*

98. Cf. U. S. Department of Commerce, Foodstuffs Division. (Data are for the year ending in 1922, etc.)

99. Cf. *Journal of Commerce.* (Quotations are for Rio No. 7, at New York.)

1. The Institute subsequently changed its title to São Paulo Coffee Institute. Cf. Wallace & Edminster, *International Control of Raw Materials.*

2. *Ibid.*

3. Cf. *Wall Street Journal,* October 8, 1930. The figures given by the *Wall Street Journal* for the years 1928 to 1930 inclusive have been changed, on the basis of a report of the U. S. Department of Commerce, to give São Paulo stocks only.

4. Cf. Emmett Harris, "Coffee Tips the Scales," *American Bankers Association Journal,* January 1930.

5. *Ibid.*

6. Cf. Wallace & Edminster, *International Control of Raw Materials.*

7. Cf. *ibid.;* also, Harris, "Coffee Tips the Scales."

8. Cf. Harris, "Coffee Tips the Scales."

9. Cf. *Wall Street Journal,* October 8, 1930.

by a group of international bankers, to be secured by 16,500,000 bags of coffee. The terms called for the sale of this entire amount within ten years and required the state to place future crops on the market currently unless their accumulation was necessary to protect the loan.[10] Control of the coffee industry is thus divided between the Institute and the bankers.

The decline in coffee prices was augmented by the financial panic, the world business depression and the rapid decline of commodity prices generally. After the flowering of the coffee trees, the early estimates of the 1930-1931 Brazilian crop had to be revised upward from 12,000,000 bags[11] to 15,710,000 bags.[12] The visible world supply[13] was announced on July 1, 1930 as 29,024,375 bags,[14] of which stocks in Brazil amounted to 23,686,848 bags.

As prices went down, purchasers continued a hand-to-mouth buying policy which intensified the depression. Conditions in Brazil became more and more acute as the price of coffee declined more than 25 per cent, and plantation owners reduced the wages of their *colonos* (tenants) by a similar amount, but gave them the right to plant other cereals between the rows of coffee plants.[15] The *colonos*, on the other hand, found themselves impoverished not only by the overproduction of coffee but by the inflation of paper money.

On October 6, 1930 affairs reached such a crisis that, following outbreaks in several sections of Brazil, banks and coffee exchanges were closed, and the price of coffee dropped to the lowest level since 1921. The May 1930 Rio future at New York touched 5.2 cents a pound, as compared with the record low of 3.55 cents in 1903.[16] The recent revolution was largely a protest against the domination of the state of São Paulo and its control of the coffee industry.[17]

The outlook for the coffee industry at present contains both favorable and unfavorable elements. The most pessimistic factor is the present statistical position, which is shown in the following table.[18]

STATISTICAL POSITION OF COFFEE	*Bags*	
Brazilian free port stocks	1,543,527	
Interior Stocks	23,686,848	
Total visible supply, Brazil, July 1, 1930		25,230,375
Visible supply, Europe	2,604,000	
Visible supply, United States	1,190,000	
World's visible supply, July 1, 1930		29,024,375
Total Brazil 1930-1931 crop	15,710,000	
Total other countries	9,000,000	
Total		53,734,375
Less estimated world's consumption 1930-1931	25,000,000	
Estimated visible supply, July 1, 1931		28,734,375

From these figures it is obvious that if the estimated world consumption is correct, the huge Brazilian stocks will be practically unchanged. Since only 16,500,000 bags are officially controlled by the bankers who made the April 1930 loan,[19] the balance of 12,234,375 bags is likely to have a depressing effect upon the market. It is a debatable question whether the actual per capita consumption will increase or decrease, as the lessened purchasing power of consumers may be counteracted by the decline in price.

10. Cf. Wallace & Edminster, *International Control of Raw Materials.*
11. Cf. J. Schroder and Company, "The Bankers and São Paulo," *Tea and Coffee Trade Journal*, August 1930.
12. Cf. *Wall Street Journal*, October 8, 1930.
13. Cf. Wallace & Edminster, *International Control of Raw Materials.*
14. Cf. *Wall Street Journal*, October 8, 1930. A later estimate by the U. S. Department of Commerce placed this figure at 29,259,000 bags.
15. Cf. Presidential Message to Congress of Dr. Washington Luis, *Tea and Coffee Trade Journal*, August 1930.
16. Cf. *Wall Street Journal*, October 7, 1930.
17. *Ibid.*, October 8, 1930.
18. *Ibid.*
19. Cf. p. 450.

Moreover, Brazil has not yet felt the entire consequences of her overproduction. In São Paulo last year there were 1,150,000,000 coffee-bearing trees, and 250,000,000 new trees were to come into bearing during 1930. Since the coffee shrub bears at its maximum capacity from the fourth to the twelfth year, Brazil may expect unprecedented coffee harvests during the next decade.[20]

There are a few favorable factors in this situation. Since buyers have been holding off, invisible supplies are believed to have been reduced to a minimum.[21] Roasters are complaining that due to export restrictions they have difficulty in securing the desired grades at the proper time.[22]

When control was first inaugurated, a tax was placed on the planting of new trees, but this tax was not enforced. It is hoped that some curtailment will be obtained by permitting the *colonos* to plant catch crops between the rows of coffee trees and that this plan will lower their cost of living.[23] If the price of coffee continues low, the coffee fields and trees may not be given proper care and this would permanently lower the yield.[24]

Other potential limits to production are the frost and the coffee pest, which is now under control but may spread if extreme vigilance is relaxed.

It is hoped that the new law prohibiting the export of the lower grades of coffee from Brazil will improve the world market situation. Part of the low-grade stocks will be used as fertilizer and part will be destroyed. It is believed that the policy of offering a higher grade also will tend to raise the average price.[25] Another reducing factor will be the depletion of stocks now in warehouses, by rotting and by destruction from the coffee bug, which attacks the beans in the bags.

Coffee cannot be indefinitely produced at a loss and this is a final factor which will tend to limit world output. There is a large 1930 crop in Colombia, but a further price decline would tend to curtail output. Curtailment through price competition, however, is almost certain to cause a prolonged period of depression in all the coffee-producing countries.[26]

Owing to the length of time which is required to raise a coffee shrub and the number of years during which it continues to bear, an immediate limitation of coffee production to demand seems improbable. However, output over a period of years will probably be restricted by a number of factors—lower yields, destruction of poorer grades and unprofitable prices. A gradual increase in world demand also should tend eventually to remedy the existing condition of overproduction.

SUMMARY

The preceding studies show in detail the results of artificial control of either the production or distribution of commodities. Although high prices and large profits may be obtained for a few years, the net result seems to be a complete demoralization of the industry, which can only be adjusted by a long and painful process. Coffee in Brazil, rubber in the East Indies, and copper in North America are outstanding examples of the history of price control.

To be effective, control must be international in scope and must aim at the production and not the marketing of the supply. Such international cooperation, together with the removal of the tariff barriers where there is a local instead of a world surplus, are the only measures which will help to alleviate the situation. All such measures, however, tend to prolong a period of maladjustment which can only be permanently cured by such readjustments as are dictated by the changes in relative demand and prices.

20. Cf. *Bank of America Review*, June 1930.

21. Cf. Nortz and Company, "World Coffee Trade and Supply," *Tea and Coffee Trade Journal*, September 1930.

22. Alfred Bosch, "Brazil's' Experience with Coffee Valorization," *Trade Winds*, July 1930.

23. Cf. "The Bankers and São Paulo." Also, Presidential Message to Congress of Dr. Washington Luis.

24. Cf. *Bank of America Review*, June 1930.

25. *Wall Street Journal*, September 23, 1930, Decio de Paula Machado.

26. Cf. A. Ogden Pierrot, "Brazil's Coffee Policy Modified," *Brazilian Business*, May 1930.